CLAIMS

We claim:

1. A fusion polypeptide comprising from the N-terminus:
a) a C-terminal intein motif;
b) a peptide; and
c) an N-terminal intein motif.

2. A fusion polypeptide according to claim 1 wherein said intein has altered cyclization acitivity as compared to the wild-type intein.

3. A fusion polypeptide according to claim 1 wherein said peptide is a random peptide.

4. A fusion polypeptide according to claim 1 wherein said peptide is derived from a cDNA library.

5. A fusion polypeptide according to claim 1 further comprising a reporter protein.

6. A fusion polypeptide according to claim 5 wherein said reporter protein is fluorescent protein selected from the group consisting of green fluorescent protein, blue fluorescent protein, yellow fluorescent protein, and red fluorescent protein.

7. A fusion polypeptide according to claim 5 wherein said reporter protein is a transcription factor.

8. A fusion polypeptide according to claim 1 further comprising a fusion partner.

9. A library of fusion polypeptides according to claim 1 or 6.

10. A fusion nucleic acid comprising from 5' to 3':
a) nucleic acid encoding a C-terminal intein motif;
b) nucleic acid encoding a peptide; and
c) nucleic acid encoding an N-terminal intein motif.

11. A retroviral vector comprising the fusion nucleic acid of claim 10.

12. A method of making a cyclic peptide in vivo comprising providing a cell comprising a fusion nucleic acid comprising from 5' to 3':

a) nucleic acid encoding a C-terminal intein motif;

b) nucleic acid encoding a peptide; and

c) nucleic acid encoding an N-terminal intein motif;

under conditions whereby a cyclic peptide is formed.

13. A method according to claim 12 further comprising transforming said cell with said fusion nucleic acid.

14. A method according to claim 12 wherein a library of cells comprising a library of fusion nucleic acids is provided.

15. A method comprising:

a) introducing an intein-catalyzed cyclic peptide library into a cell; and

b) screening for an altered phenotype.

16. A method for identifying target molecules comprising:

a) introducing an intein-catalyzed cyclic peptide library into a cell;

b) screening said cell for an altered phenotype; and

c) isolating target molecules that bind to the cyclic peptide.

17. An intein-catalyzed cyclic peptide library comprising:

a) an intein;

b) a random peptide of at least 3 amino acids in length; and

c) a reporter protein.

18. A library according to claim 17 wherein said intein is a mutant intein with altered cyclization efficiency.